

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: *Little River Aerial*

ROAD PLAN DATE: *January 10, 2003*

**DEFINITIONS**

Construction

Where in the terms of this contract the activity of building a new right-of-way and road over ground that has not had a previously established road, or is a relocation that is at least a full right of way width from an existing road.

Reconstruction

Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Reconstruction includes activities that would be classified as a **Class II, Class III or Class IV Special Forest Practice**.

Pre-haul Maintenance

Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Pre-haul maintenance includes activities that would be classified as a **Class 1 Forest Practice**.

Maintenance

Where the pre-existing conditions of an existing road were acceptable to the State prior to this contract, and the repair and/or replacement of materials, components or structures become necessary as result of deterioration by use or inordinate damage during the terms of this contract.

**SCOPE OF PROJECT**

This project includes, but is not limited to new construction including: clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, landing construction, acquisition and installation of drainage structures, and hauling and application of rock.

**Note:** Landing size shall be 75' by 75' larger landings may be approved by the contract administrator.

**SECTION 1 - GENERAL CLAUSES**

1.1-1

Clauses in this plan apply to all construction or reconstruction or pre-haul maintenance including landings unless otherwise noted.

1.1-2

Construction or reconstruction or pre-haul maintenance of the following road/s is required. All road/s shall be constructed on the State's location and in accordance with the Road Plan.

<u>Road</u>	<u>Length</u>	<u>Type</u>
4+69 Spur	4.69 stations	Construction

1.1-3

Construction or reconstruction or pre-haul maintenance of the following road/s is not required. **If the Purchaser elects to use any of these roads, they shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.**

<u>Road</u>	<u>Length</u>	<u>Type</u>
4+34 Spur	4.34 stations	Construction

1.1-4

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted, in writing, to the Contract Administrator for consideration. Submitted plans must be approved before construction begins.

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1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and unstable soil.

1.2-1

Construction and/or reconstruction shall not be permitted from November 1 to April 30 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.2-2

Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the Contract Administrator.

1.2-3

All roads shall be constructed using track mounted hydraulic excavators unless otherwise authorized, in writing, by the Contract Administrator.

1.3-1

Rock hauling shall not be permitted from November 1 to April 30 unless authorized, in writing, by the Contract Administrator.

1.3-2

Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

**SECTION 2 - CLEARING**

2.1-1

Fell all vegetative material larger than 6 inches dbh or over 20 feet high between the marked right-of-way boundaries and within waste areas or if not marked in the field, between clearing limits specified on Typical Section Sheet.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism, as defined by the Contract Administrator. Right-of-way timber shall not be decked in locations that impede drainage.

**SECTION 3 - GRUBBING**

3-1

All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed.

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3-2

Grubbing limits are defined as the entire area between external limits shown on the Typical Section Sheet.

**SECTION 4 - DEBRIS DISPOSAL AND REMOVAL**

4.1-1

Right-of-way debris is defined as all vegetative material larger than one cubic foot in volume, within the clearing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to application of rock.

4.2.3-3

Right-of-way debris shall not be placed against standing timber.

4.2.3-4

Right of way debris shall be scattered outside the grubbing limits.

**SECTION 5 - EXCAVATION**

5.1-1

Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

5.1-3

The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

<u>Favorable Grade</u>	<u>Adverse Grade</u>	<u>Minimum Curve Radius</u>
18%	12%	60 feet

Changes in road grade shall not exceed 7%, except as required in this clause.

Adverse grades on curves shall not exceed 10 percent of the curve radius.

Favorable grades through switchbacks shall not exceed 12%.

Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

The switchback is defined as, the curved segment of road, between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Transition grades required to meet switchback grade limitations, shall be constructed on the tangents preceding and departing from the switchbacks.

5.1-4

Extra widening on the inside of curves shall be:

2 feet extra --- 80 to 100 foot radius curves  
4 feet extra --- 60 to 80 foot radius curves

5.1-5

Curve widening where required, shall be added to the inside of curves.

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5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table (except as construction staked or designed):

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes to 55%).....	1:1
Common Earth (55% to 70% sideslopes).....	3/4:1
Common Earth (on slopes over 70%).....	1/2:1
Fractured or loose rock .....	1/2:1
Hardpan or solid rock .....	1/4:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Embankments shall be widened as follows:

<u>Height at Shoulder</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment slope ratio</u>
Common earth and rounded gravel.....	1-1/2:1
Angular rock .....	1-1/4:1
Sandy Soils .....	2:1

5.1-12

Organic material shall be excluded from embankment shown on Typical Section Sheet and from waste material deposited on slopes in excess of 40 percent.

5.1-15

Excavated material may be deposited adjacent to the road prism on side slopes up to 45 percent if the material is compacted.

5.1-21

Waste material shall not be deposited within 50 feet of a culvert installation.

5.2-1

Pioneering operations shall not undercut the final cut slope, deposit excavated material outside the right-of-way limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-1

Silt-bearing runoff, as defined by the Contract Administrator, shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds or other methods to be approved, in writing, by the Contract Administrator.

5.5-5

Finished subgrade shall be crowned as shown on the Typical Section Sheet. Grade and compact to a uniform, firm, rut-free surface to ensure surface runoff in an even unconcentrated manner.

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**SECTION 6 - DRAINAGE**

6.2.1-1

Purchaser shall furnish, install and maintain corrugated polyethylene and/or aluminized steel Type 2 (ASTM A929, A760, A796, AASHTO M274, M36) pipe as designated on Culvert List. Culvert and flume lengths shall be varied to fit as built conditions subject to written approval by the Contract Administrator.

6.2.1-1A

Corrugated polyethylene pipe shall have a corrugated exterior and smooth interior, shall meet ASTM F405, F667 and AASHTO M252, M294 Standard Specifications, and shall be manufactured with high density polyethylene resins.

6.2.1-2

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe. Annular corrugated bands and culverts ends shall be used on aluminized steel pipe.

6.2.2.1-1

Culvert, downspout, flume and energy dissipator installation shall be in accordance with Culvert and Drainage Specification Detail.

6.2.2.2-1

Any damaged aluminized coating or cut ends shall be retreated with a minimum of 2 coats of zinc rich paint.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed prior to application of rock. Ditches shall drain to culverts, ditchouts and natural drainages.

6.3-2

Shaping the ditchline, culvert headwalls and catchbasins shall be completed prior to application of rock and shall be done in accordance with the Typical Section Sheet and Drainage Specification Detail.

6.4-1

Catch basins shall be constructed to resist erosion. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Head walls shall be constructed in accordance with Culvert and Drainage Specification Detail at all cross-drain culverts.

6.5-2

Embankment slopes adjacent to culvert inlets and outlets shall be armored for a distance of two culvert diameters on each side of the pipe and one culvert diameter above the pipe in accordance with Culvert List.

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**SECTION 7 – ROCK**

7.1-1

Rock used under this contract may be obtained from the following pits on State land:

<u>Source # / Name</u>	<u>Location</u>	<u>Rock Type</u>
1/ Place Pit Crushed Stockpile	Sec 33 T31N R07W	Crushed Rock

7.1-2

Rock used under this contract may be obtained from the following pit on county land.

<u>Source # / Name</u>	<u>Location</u>	<u>Pit Owner</u>	<u>Letter Dated</u>	<u>Rock Type</u>
2/ Herrick County Pit	NE SE SEC 29 T30N R07W	Clallam County	1-16-03	Pit Run

Note: Purchaser shall contact Clallam County prior to any rock removals to arrange for access to the pit.

7.1-5

Use of all rock sources are subject to written approval from the Contract Administrator.

7.4.2-1

Apply at least the minimum required rock quantity as shown on the Rock List.

7.4.2-2

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-8

Each lift of rock shall be shaped as shown on the Rock List and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even unconcentrated manner.

7.4.3-3

Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

7.5.5-0

At Station 4+69 on the 4+69 spur the Purchaser shall construct a stockpile site, haul and stockpile 3671 yards from the Herrick County Pit.

7.5.5-1

Rock stockpiles shall meet the following specifications:

Before placing rock upon the stockpile site, the site shall be cleared of vegetation and the ground leveled to a smooth, firm, uniform surface.

The stockpile, when completed, shall be limited to a maximum height of 24 feet. Stockpiles in excess of 200 cubic yards shall be built up in layers not more than 4 feet in depth. Stockpile layers shall be constructed by trucks, clamshells or other methods approved by the contract Administrator. Each layer shall be completed over the entire area of the pile before depositing aggregates in the succeeding layer. Any method of placing rocks in stockpiles, which in the opinion of the Contract Administrator, breaks, degrades or otherwise damages the rock will not be permitted.

**SECTION 8 STRUCTURES**

8.2-4

Requirements - 4+34 Spur & 4+69 Spur / Little River Road Approaches:

Purchaser must enter into a road approach permit with Clallam County .

Purchaser must provide the State with a copy of the executed permit, or a letter from Clallam County indicating that a satisfactory road approach permit has been consummated.

**SECTION 9 - ROAD AND LANDING CLOSURES**

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9.1-1

The following road/s shall be closed by the purchaser within 10 days following completion of timber harvest.

**Road**

4+34 Spur

**Stations**

0+00 – 4+43

**Requirments**

Pull culvert & install non-drivable waterbars as directed by Contract Administrator. Construct tank trap at





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The diagram illustrates a cross-section of a road structure. It shows three distinct layers: a bottom layer labeled 'SUBGRADE' with a width dimension line above it; a middle layer labeled 'BALLAST' with a width dimension line above it; and a top layer labeled 'SURFACING' with a width dimension line above it. The layers are shown sloping downwards on both sides of a central axis, which is marked with a centerline symbol (a circle with a cross). The surfacing layer is depicted with a cross-hatched pattern, the ballast layer with a dotted pattern, and the subgrade with a solid fill.

1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed. All depths are compacted depths.
2. Rock slopes shall be 1½ (H) : 1 (V).
3. All rock sources are subject to approval by the Contract Administrator.
4. Rock source 1/ Place Pit  
2/ Herrick County Pit

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### Required Minimum Gauge for Metal Pipe

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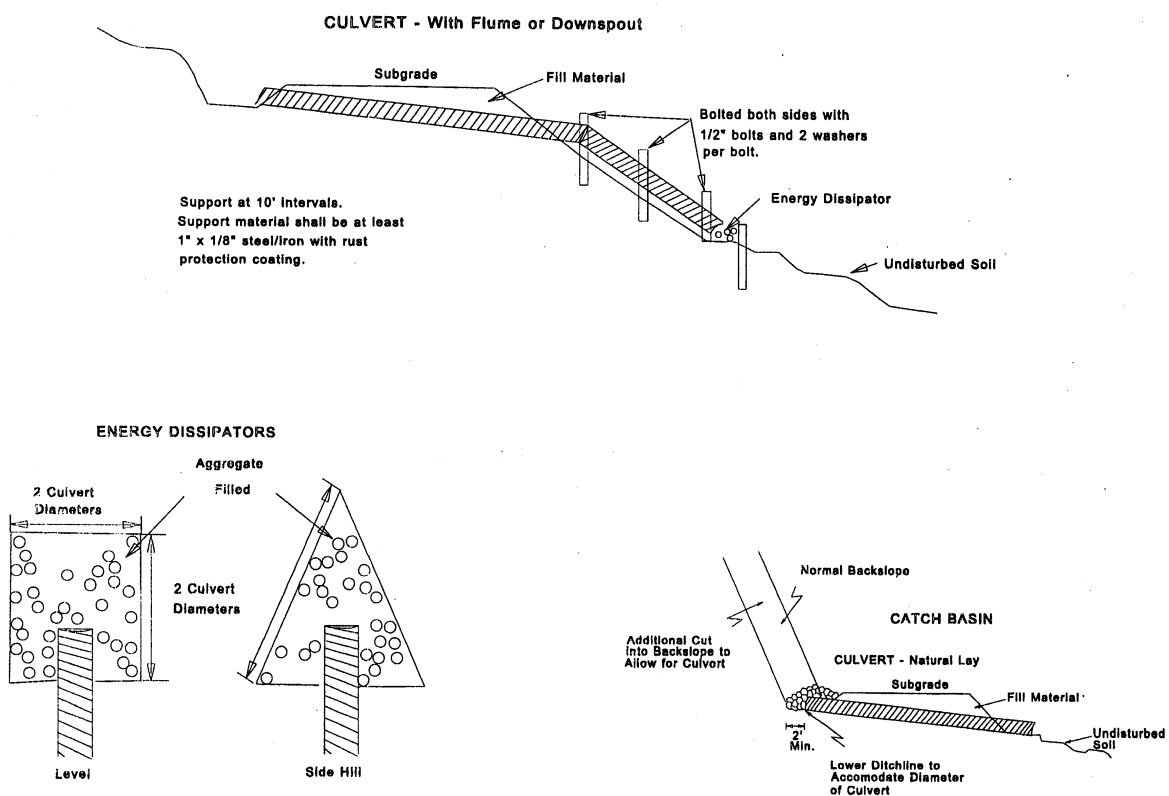
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## CULVERT AND DRAINAGE SPECIFICATION DETAIL

### INSTALLATION REQUIREMENTS:

1. Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.
2. All bedding material of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill. Crushed stone, gravel or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4", whichever is smaller. All material shall be compacted in six inch layers under the haunches, around the sides and above the pipe to the minimum height of cover.
3. Crushed stone and gravel backfill materials shall be compacted to a level of 90-95% AASHTO standard density. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



### DISSIPATOR SPECIFICATIONS:

Depth: 1 culvert diameter  
Aggregate: 6" plus

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